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March 29, 1991

TO: Minerals File

FROM: Holland Shepherd, Senior Reclamation Specialist *HUS*

RE: Site Inspection, Goldstrike Mine, Tenneco Minerals, M/053/005,
Washington County, Utah

Date of Inspection: March 20, 1991
Time of Inspection: 3:00 - 5:00 p.m.
Conditions: Cold, windy, snowing and raining, lots of mud
Attendees: Mike Young and Jim Smith, Tenneco; Holland Shepherd and Tony Gallegos, DOGM

This inspection was conducted to evaluate the damages resulting from a severe storm event, which impacted the site on February 28, through March 1, 1991. The storm dropped 6.28 inches of precipitation on the site over a time period of 48 hours. Also, on March 6, 1991, fly rock from a mine blast damaged the process water pond and the barren pond, by penetrating the flexible membrane liners.

Though the site had experienced an extreme rainfall event (equivalent to the 700 year event storm), the damages did not appear extreme. Some of the most obvious results of the storm included: 1) emergency discharge of process water from the containment facilities; 2) blowout of the operator's sediment pond; 3) erosion damage to topsoil stockpiles; and 4) extensive road damage, which has already been repaired.

During the storm, approximately 782,000 gallons of water was released from the process pond, to avoid an uncontrolled overflow. This water was treated with chlorine to kill the cyanide, before release. The discharged water was sent to the sediment pond. However, since the sediment developed a hole in the dike, during the storm, the effluents continued on downstream into Quail Creek, then to the East Fork of Beaver Dam Wash. Apparently the operator monitored the effluents in several places downstream and will be providing the Division with a report addressing the levels of cyanide detected.

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According to the operator, the majority of the excess water generated during the storm originated from an exposed section of pad liner (@4 acres). Apparently the process facilities designed for the 100 year, 24 hour storm event, were able to handle this design, but were overwhelmed when the event went beyond the 100 year, 24 hour.

The water control systems at the mine worked well except for the sediment pond. The pond, designed for the 100 year, 24 hour event, discharged after becoming about 1/4 full. Very soon after it began to fill up, a hole developed at the base of the dike and it began to rapidly discharge. Fortunately, it was not full before the leak developed, otherwise it may have failed completely.

Selective settling of rock fill material at the base of the sediment pond dike, caused large boulders to collect at the very bottom, creating a french drain effect at the base of the dike. Quality control during the initial dike construction, was probably lacking, allowing for this result. Apparently, no clay lining was incorporated into the base of the dike and pond during construction. The leak exited on the down stream portion of the dike, reestablishing the old stream channel and exposing some of the large 3-4 foot boulders, making up the material found at the base of the dike.

The dike was originally built to contain 17.5 acre-feet. The operator then discovered it was too small and increased its capacity to 19.8 acre-feet. This required the addition of an extra 5 feet of dike material and raising the spillway another 5 feet. The pond has been constructed to be under 20 acre-feet, which places it just under the cutoff for meeting more stringent federal and state design and inspection demands. The approved MRP indicates the dam was to be built to contain 21.3 acre-feet of drainage.

As part of this inspection, it was our intention to evaluate erosion damage from the storm, which may have affected the topsoil stockpiles. The topsoil stockpile, just below the Padre Pit, sustained the most obvious damage. A large 3-foot deep gully developed on the southern slope of the pile, originating at the tops of the pile. No sediment control structures have been placed around the base perimeter of the pile. Mr. Smith indicated that silt fence would be placed around the bottom later this spring, as soon as conditions allowed access to the site. Other piles have been or will be seeded to help in interim stabilization.

The operator has constructed a new process pond on top of existing heap leach pad #1, at the northeast end. The pond has been constructed for the purpose of

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excess process and runoff water containment. As a result of the unprecedented precipitation experienced at Goldstrike over the last 4 weeks, an excess amount of water has developed within the process systems. As a means of containing this water, the operator has constructed a new pond approximately 1/4 acre in surface dimension. Apparently, because of the emergency situation at the site, the pond has not been permitted via this agency or the Bureau of Water Pollution Control.

The operator has installed a propane cannon at the site of the new pond to haze wildlife. I discussed with the operator, the cannon may be effective for deer, but will probably prove ineffective for birds. We discussed the possibility of using alternate means to keep animals out of the process pond. One topic discussed at length involved covering the ponds, by netting or other means.

The operators process pond and barren pond sustained damage during a fly rock incident on March 6, 1991. The operator indicated that the barren pond was repaired, but the process pond was still leaking. The process pond apparently could not be repaired until the operator was able to drain it. Some of the damage has impacted the bottom of the pond, hence requires complete drainage for repair.

jb

cc: Richard Hall, Dam Safety
Ken Kluksdahl, Tenneco
Larry Mize, Bureau of Water Pollution Control
Wayne Hedberg
Tony Gallegos

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